UPDATE:

FORECAST OF POWER CONSUMPTION
BY THE B. C.
COAL MINING INDUSTRY

FOR

B. C. HYDRO AND POWER AUTHORITY

BY

H. N. HALVORSON CONSULTANTS LTD.

MARCH 1984

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1.0 Introduction

In early 1983, on commission to B. C. Hydro, H. N. Halvorson Consultants Ltd. forecast power consumption by the B. C. coal mining industry. The results of the study were published in the report "Forecast of Coal Mining Activity to 2002" March 1983.

In February, 1984 B. C. Hydro commissioned H. N. Halvorson Consultants Ltd. to update the 1983 report. To minimize costs only the forecasts were to be prepared. The raw data were to be submitted in tabular form. No report was to be written.

To use the data in this study it is necessary to refer to the detailed tables in the March 1983 report. To facilitate this the tables that follow have the same numbers as corresponding tables in the March 1983 report.

The people interviewed in this update are listed in Table 1 (1984).

TABLE 1

ORGANIZATIONS INTERVIEWED

Organization	Individual	Title	Address	Telephone
Brinco Mining Ltd.	T. E. Milner	Manager-Engineering	1055 W. Hastings Street, Vancouver	688-2511
Chase Manhattan Bank	V. Calarco	Vice-President	New York, N.Y.	(212) 552-2560
Consolidation Coal Sales Co.	D. Casper	Vice-President	1800 Washington Rd, Pittsburgh, PA	(412) 831-4030
Crows Nest Resources Ltd.	W. S. Hunter	Manager Project Dev.	525 - 3rd Ave. SW, Calgary, Alta.	(403) 232-2162
	D. C. Way	Marketing		(403) 232-4481
	N. Laird	Analyst, Socio-Economics		(403) 232-2145
Esso Minerals Canada	B Mills	Professional Engineer, Electrical	237 - 4th Ave. SW, Calgary, Alta.	(403) 267-1344
Fording Coal Ltd.	R. H. Stan	Market Coordinator		
	D. Gaspe	Marketing Manager	Elkford, B. C.	867-2271
Government of B. C., Ministry of Energy, Mines and Pet. Res.	L. Sivertson	ADM Mineral Resources Branch	Parliament Buildings, Victoria, B. C.	387-6242
Gulf Canada Resources Ltd.	L. Chrismas	Man. Bus. Dev. Coal Dept.	401 - 9th Ave. SW, Calgary, Alta.	(403) 270-3547
Mitsui & Co. (Canada) Ltd.	T. P. Kikuchi	Asst. Gen. Manager Steel Dept.	595 Burrard Street, Vancouver	681-5111
Posco-Canada Co. Ltd.	W. S. Chun	Treasurer	650 West Georgia Street, Vancouver	669-6689
Quintette Coal Ltd.	A. Fornipiov	Eng. Electrical & Instr.	Tumbler Ridge, B. C.	242-3221
Teck Corporation	L. Bilheimer	Assistant to Senior VP	1199 W. Hastings Street, Vancouver	687-1117
U.S. Bureau of Mines	F. S. Schottman	Div. of Ferrous Metals	2401 E. Street, N.W. Washington, D.C.	(202) 634-1022
Utah Development Co.	G. D. Lill	Manager Marketing	GPO Box 1389, Brisbane 4001, Australia	(07) 226-0600
Westar Engineering Co. Ltd.	G. Roblesky		Sparwood, B. C.	425-8305
Westar Mining International Ltd.	B. L. Acton	Man. Thermal Market Dev.	1176 W. Georgia Street, Vancouver	681-8222
	B. L. McDermott	VP Marketing, Latin Amer. Asia		
	H. Courtenay	Director Market Research		
	R. G. Heywood	Marketing Analyst		
World Bank	H. Hashimoto		2131K Street, Washington, D.C.	(202) 334-8499

2.0 Forecast of B. C. Coking Coal Sales

2.1 Japan

2.1.1 Crude Steel Production

Table 13 (1984) presents the revised forecast of Japanese coking coal requirements and the share of this requirement that will accrue to Australia and Western Canada. This forecasted requirement is compared in Table 14 (1984) with Japanese contracted quantities in Australia and Western Canada and in Table 15 (1984) with the capability for supply in these two countries.

The major change from the 1983 forecast is that it is now assumed that Japanese crude steel production will decline (at a compounded rate of about 1% per year) over the next two decades. In the 1983 forecast steel production was assumed to grow at approximately 2% per year compounded.

The forecasted decline reflects a growing body of opinion that crude steel production will decrease in the industrialized nations, Japan, U.S. and Western Europe. The resulting reduction in blast furnace capacity will be replaced by electric steel making plants in the industrialized nations and by new blast furnace capacity in developing nations.

The construction of so-called mini-steel plants using steel scrap and/or pre-reduced iron pellets and electric energy rather than iron ore and coke is accelerating in the industrialized countries. Huge quantities of steel scrap exist in the industrialized countries, especially in the U.S. Steel production from scrap using electric furnaces requires less capital investment and yields steel

TABLE 13 (1984)

FORECAST OF TOTAL JAPANESE COKING COAL REQUIREMENTS
FROM CANADA AND AUSTRALIA
(million tonnes)

		1984	1985	1986	1987	1988	1989	1990	1995	2000	2003
A.	Demand										
	Crude Steel Production	100	103	103	102	101	100	99	92	85	81
	Pig iron production	73	75	78	78	77	76	75	70	65	62
	Coal requirement for pig iron	58	60	62	62	62	61	60	56	52	50
	Coal requirement for gas/coke production	4	5	5	5	5	5	5	5	6	6
	Total coal requirement	62	65	67	67	67	66	65	61	58	56
	Domestic Coal Supply	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)
	Coal Import Demand	58	61	63	63	63	62	61	57	54	52
B.	Supply										
	USA	12	12	12	12	12	12	12	11	10	9
	USSR	2	2	2	5	5	5	5	5	5	5
	China	3	3	3	5	5	5	5	5	5	5
	S. Africa	2	2	2	2	2	2	2	2	2	2
	Weak and Non-coking coals plus petroleum coke	3	4	5	5	5	5	5	6	7	7
	Sub-total	22	23	24	29	29	29	29	29	29	28
C.	Requirement from Australia & Canada	36	38	39	34	34	33	32	28	25	24

TABLE 14 (1984)

COMPARISON OF FORECASTED COKING COAL REQUIREMENTS FROM AUSTRALIA
AND WESTERN CANADA WITH CONTRACTED QUANTITIES
(million tonnes)

	1984	1985		1990		1995		2000		2003	
		A	B	A	B	A	B	A	B	A	B
1. Japanese Requirement from Australia and Canada (Line C from Table 13 (1984)	36	38	38	32	32	28	28	25	25	24	24
2. Contracted Quantities[1] (Appendix D)											
Australia: NSW	18[2]	11[3]	19[3]	-	-	-	-	-	-	-	-
Queensland	28	28	28	8	28	4	28	-	28	-	28
Western Canada	19	16	22	13	22	10	22	0	22	0	22
Total	65	55	69	21	50	14	50	0	50	0	50
3. Surplus (Deficit) Amount Contracted	29	17	31	(11)	18	(14)	22	(25)	25	(24)	26
% of Requirement	81	45	82	(34)	56	(50)	79		100		108

[1] Quantities in original contracts.
[2] Original 1984 contracted tonnage of 18 renegotiated to 8.
[3] Original contracted tonnage of 19 renegotiated to 11.

TABLE 15 (1984)

COMPARISON OF FORECASTED JAPANESE COKING COAL REQUIREMENT
FROM AUSTRALIA AND WESTERN CANADA WITH MINE SUPPLY CAPABILITIES
(million tonnes)

		1984	1985	1986	1987	1988	1989	1990	1995	2000	2003
1.	Japanese Requirement from Australia and Canada (Line C Table 13 (1984)	36	38	39	34	34	33	32	28	25	24
2.	Supply Capability[1]										
	Australia: NSW	44	45	47	47	47	47	47	47	47	47
	Queensland	42	45	45	45	45	45	45	41	40	36
	Western Canada	26	29	29	29	29	29	36	38	38	38
	Total	112	119	121	121	121	121	128	126	125	121
3.	Surplus:	76	81	82	87	87	88	96	98	100	97
	% of Requirement	211	213	210	256	256	267	300	350	400	404

[1] Announced planned production rates at existing mines. Only mines with existing Japanese contracts are considered.

at lower cost and higher productivity rates than from conventional blast furnace operations. Sufficient scrap exists to support considerable steel production over the forecast period.

Transportation charges for raw materials are a major cost in making conventional steel. The largest component is freight for iron ore. This fact will tend to move steel production closer to sources of iron ore and away from Japan, Western Europe and the U.S. These countries are largely or totally dependant on imported iron ore. Countries rich in not only iron ore but also coal and other fuels will be especially favoured. Australia, Venezuela and Brazil are serious contenders. Countries rich in iron ore and natural gas can be expected to make pre-reduced iron pellets and forego the use of coal.

Already signs exist of this trend. Japanese (Kawasaki Steel Corp), Italian (Finsider) and Brazilian (Siderbras) companies in 1978 started construction of a 3.3 million tpy steel plant at Tubarao in Brazil. The Italian and Japanese partners are expected to take their share of steel billet production to their home markets.

In the forecast that appears in Table 13 (1984) the assumption is made that blast furnace capacity will gradually be replaced in Japan by imported steel billets and steel coil and sheet. In addition Japanese steel exports will gradually be reduced though competition in its export markets. Japan currently exports about ¼ of its production as semi-finished steel products.

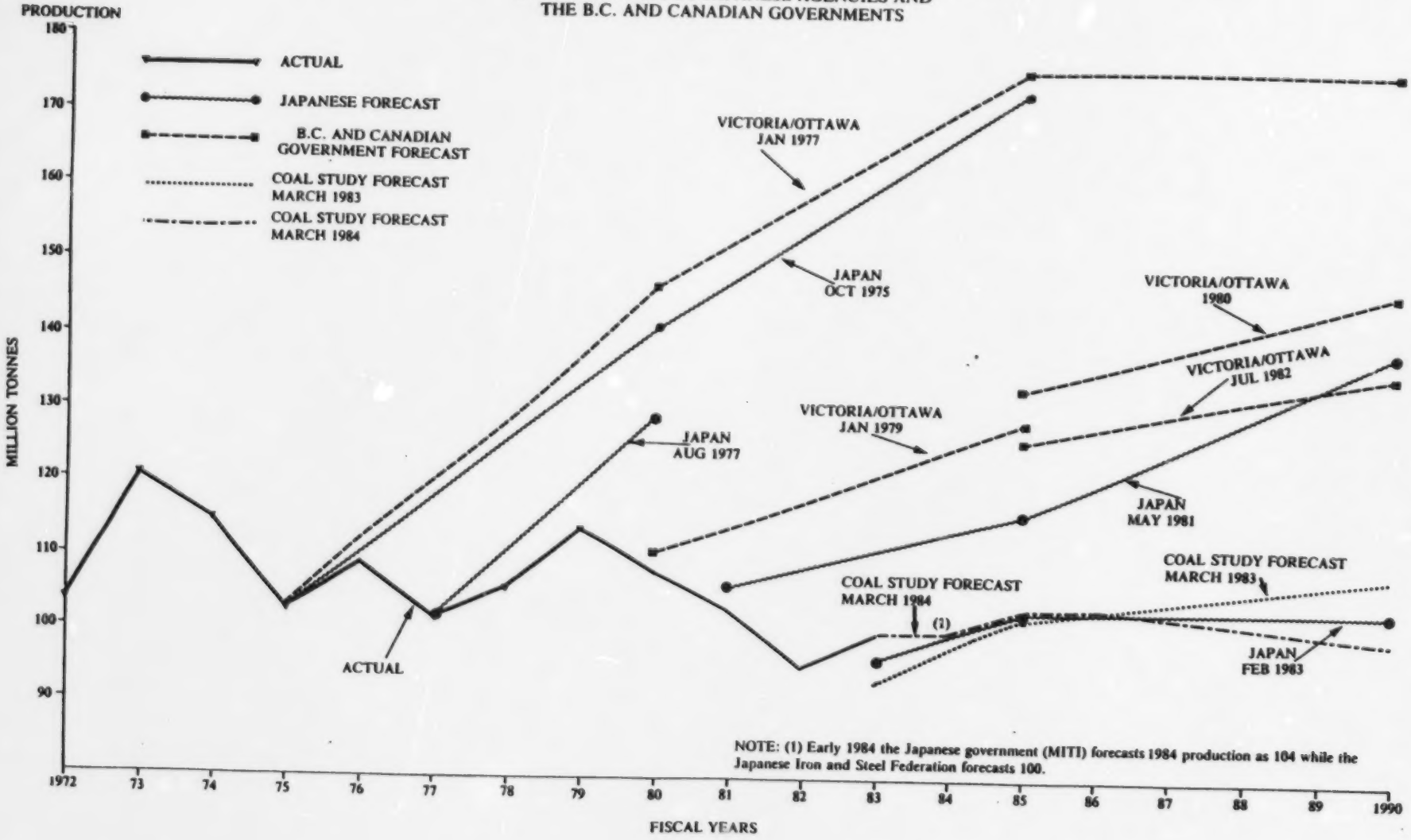
The forecast assumes a slight pick-up in crude steel production in 1984, 1985 and 1986 and then a 1% per year decline for the rest of the decade. In the 1990's it is assumed the decline will accelerate as capacity starts to come on in developing nations and a decrease of 1.5% per year from 1990 is used. Japanese production in the decade 1973-1982 declined at an annual compounded rate of 1.4%.

Figure 3 (1984) compares this new forecast of Japanese crude steel production with that prepared last year and those presented by various Japanese and Canadian sources over the last eight years. Actual production back to 1972 is presented for reference.

2.1.2 Supply of Coal to Japan

The total supply of coal to Japan from sources other than Australia and Western Canada is approximately the same as in last year's forecast. The U. S. shipments are assumed to be lower but this is compensated for by increased Japanese purchases of USSR and Chinese coals and the use of more weak coking coals and petroleum cokes. These latter reflect an increasing use of pulverized coal in Japanese blast furnaces. With respect to USSR and Chinese coal, Japan has committed capital to coal development, especially in China, and has contracted to take coal from both. For political and economic reasons, more coal will be purchased.

FIGURE 3
COMPARISON OF ACTUAL JAPANESE CRUDE STEEL PRODUCTION
WITH FORECASTS BY JAPANESE AGENCIES AND
THE B.C. AND CANADIAN GOVERNMENTS



NOTE: (1) Early 1984 the Japanese government (MITI) forecasts 1984 production as 104 while the Japanese Iron and Steel Federation forecasts 100.

The forecast of a similar supply of coal from sources other than Australia and Western Canada coupled with a reduced total demand results in the amount of coal Japan will take from Australia and Western Canada* being considerably lower than was forecast last year. This is especially evident in the 1990's.

2.2 Markets Other Than Japan

Table 2.1 presents a forecast of Western Canadian sales to non-Japanese market; Western Canada's sales to Japan; and B. C.'s sales to all markets. This is an update of information presented last year in Appendix E. South Korea and Taiwan are the most important customers after Japan. Like Japan both these countries look on Western Canada as an important source of supply.

* Japan has recently started to import some coal from Nova Scotia. This is a high volatile, high fluidity coal similar to coals now purchased by the Japanese from the Eastern U.S. As such, these purchases from Nova Scotia will not impact on exports from Western Canada or Australia but rather from the U.S.

TABLE 2.1

SALES OF WESTERN CANADIAN COKING COALS
TO NON-JAPANESE AND JAPANESE MARKETS

	Average Growth Rate 1984-2003 % per year	1984	1985	1986	1987	1988	1989	1990	1995	2000	2003
South Korea	4.7	1.8	1.8	2.0	2.2	2.5	2.7	3.0	3.5	4.0	4.3
Taiwan	5.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.7	0.8
Other Asia	5.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4
Europe	-	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Latin America	4.5	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.8	2.4	2.8
Other	6.8	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.7
Sub Total	4.6	3.9	3.9	4.1	4.4	4.7	4.9	5.4	6.6	8.1	9.2
Western Canadian Sales to Japan[1]	(2.9)	12.6	12.5	11.7	10.2	10.2	9.9	9.6	8.4	7.5	7.2
Total	nil	16.5	16.4	15.8	14.6	14.9	14.8	15.0	15.0	15.6	16.4
B. C. Share[2]	nil	13	13	13	12	12	12	12	12	13	13

[1] Assuming historic split of Japanese requirement between Australia and Canada of 70:30 holds except for 1984 and 1985 when Canada obtains 35% and 33%, respectively.

[2] Assuming B. C. secures 80% of Western Canadian sales or an amount related to the relative installed capacities in B. C. and Alberta.

The major assumptions used in the forecast are:

1. Non-Japanese Markets

   (a) 1984 sales volumes will equal 1981 volumes;

   (b) sales to W. Europe will stagnate;

   (c) sales to S. Korea will be those currently forecast by the S. Koreans; and

   (d) other Asian, Latin American and miscellaneous markets will grow at a compounded rate of 2.5% per year for the period 1985-1990 and thereafter at 5.5% per year. These are growth rates currently forecast by The World Bank.

2. In the Japanese market, Western Canada will obtain 35%, 33% and then 30% of the combined Western Canadian and Australian sales to Japan in 1984, 1985 and thereafter, respectively.

3. B. C. will capture 80% of Western Canadian sales.

The forecast shows B. C.'s total sales of coking coal stagnating at the 12-13 million tpy level to the end of the forecast period. Last year, sales were forecast to run at the 13-15 million tpy level and then increase to 18 million in 1985 and to 22 million tpy by 2002.

The declining sales by B. C. to Japan are largely compensated for by increasing sales to other markets. Japan's 76% share of total sales in 1984 by Western Canada drops to 44% by 2003.

This is the result of the major underlying assumption that blast furnace production will shift from the industrial to the developing nations. Should this not occur then sales to Japan would be larger than shown; however, sales to other nations would be smaller. The end result would likely be roughly the same.

To calculate B. C.'s sales to Japan the assumption is made that of the combined Japanese purchases from Australia and Canada, Canada will capture 35% in 1984, 33% in 1985 and 30% thereafter. Historically Canada's share has been 30%. Based on contracts currently in effect with existing and new mines Canada should expect 35% of the Japanese business. The forecast assumes that the Australians will use their cost advantage over Western Canadian producers to eventually (by 1986) regain their market share. Even if Canadian mines could maintain their share at 35%, this would only add about 0.5 million tonnes to B. C.'s sales in the year 2000.

2.3 Mine by Mine Production Forecast

Assuming the B. C. market developed in Table 2.1, an attempt was made to show the level of production individual B. C. producers might achieve. This is presented in revised Table 17 (1984). This was done for the purposes of the load forecast and not for the purposes of an accurate production inventory.

Table 17 (1984) indicates that the B. C. industry will run at about 60% of actual capacity for the forecast period. This assumes expansion plans of some operators are not acted upon.

TABLE 17 (1984)

FORECAST OF COKING COAL PRODUCTION IN B. C. (million tonnes)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1995	2000	2003
Southeastern B. C.													
Balmer: Production	6.6	4.9	5.3[1]	5.0[1]	5.0	4.7	4.3	4.3	4.3	4.3	4.3	4.8	4.8
Mine Plan	6.8	6.8	6.3	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Fording: Production	4.0	3.5	2.8[1]	2.5[1]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.7	2.7
Mine Plan	4.0	4.0	4.9	5.2	6.0	6.0	6.0	6.0	6.0	6.0[7]	6.0	6.0	6.0
Greenhills: Production	-	-	0.34[1]	1.0[2]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Mine Plan	-	-	0.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8[8]	1.8	1.8
Line Creek: Production	-	-	0.8[1]	1.0[3]	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Mine Plan	-	-	0.6	1.0	1.1	1.2	1.3	1.3	1.3	1.3[9]	1.3	1.3	1.3
Northeastern B. C.													
Quintette: Production	-	-	-	2.1[4]	2.1	2.6	2.0	2.0	2.0	2.0	2.0	2.3	2.3
Mine Plan			1.05	3.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Bullmoose: Production	-	-	-	1.4[5]	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Mine Plan			0.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Total Forecasted Market	10.6	8.4	9.2[6]	13	13	13	12	12	12	12	12	13	13
Total Mine Capacity	10.8	10.8	14.2	20	22	22	22	22	22	22	22	22	22
Operating Rate - %	98	78	65	60	59	59	55	55	55	55	55	59	59

[1] Owner estimate.
[2] Owner forecasts 1.4.
[3] Owner forecasts 1.1.
[4] Assumes 60% of design because of start-up problems.
[5] Assumes 80% of contract.
[6] B. C. Ministry of Energy, Mines and Petroleum Resources estimate is 9.6.
[7] Owner states it could increase capacity to 10 million tpy.
[8] Owner states it could increase capacity to 3.3 million tpy.
[9] Owner states it could increase capacity to 4 million tpy.

It is most unlikely that producers can tolerate operating at such low utilization factors for extended periods. Rather it is more probable that mine closures (for extended periods or permanently) will occur. Should this happen, it is impossible to forecast which specific mines would close. This, however, is not too critical for the purposes of the load forecast as the spread in power consumed per tonne of coal shipped is not that wide. The average power consumption for the six B. C. coking coal producers is approximately 35 kW.h per tonne of product with the highest being 45 and the lowest 28 kW.h per tonne. If the assumption is made that sufficient closures take place in 1985 that the remaining producers can operate at 80% of capacity and that the highest users of power per tonne of product are the ones that close, the total B. C. annual power consumption drops by 10%. Conversely, if the lowest power users are the ones to close, total consumption goes up by 2%.

2.4 Value of B. C. Coking Coal Shipments

The annual value of B. C. production is presented in the revised Table 18 (1984). These values are significantly lower than forecast last year. This results from a more pessimistic price outlook coupled with the reduced tonnage now forecast for sales to Japan.

The major assumptions used in the price forecasts are that Northeast coal prices will be reduced in 1984 by $15 per tonne from the contract price of $97 and that the prices received by all existing and new mines in B. C. will be the same by 1987. Thereafter, a 1.5% per year real increase in price is forecast. A real increase in price must come at some point to provide an adequate return on capital. A similar scenario was used last year only it was assumed prices would recover earlier and rise to higher values sooner. The poor world economy now seems to favour a more depressed price scenario.

TABLE 18 (1984)

FORECAST OF THE VALUE OF B. C. COKING COAL PRODUCTION
CONSTANT 1984 $ Canadian

	1981[3]	1982[3]	1983	1984	1985	1986	1987	1988	1989	1990	1995	2000	2003
1. Sales (million tonnes) from Table 17 (1984)													
Balmer and Fording	10.6	8.4	8.1	7.5	7.5	7.2	12	12	12	12	12	13	13
Line Creek			0.8	1.0	1.0	0.8							
Greenhills			0.3	1.0	1.0	1.0							
N.E. Producers				3.5	3.5	4.0							
2. Prices[1] $ per tonne FOBT[2]													
Balmer and Fording			70	69	70	72							
Line Creek	84.40	90.88	74	73	73	73	73	74	75	76	82	89	93
Greenhills			86	75	74	74							
N.E. Producers			97	82	79	76							
3. Value													
Million $ Canadian	895	763	652	953	949	955	876	888	900	912	984	1,157	1,209

[1] Assumes 1.5% per year real increase in price after 1986.
[2] Loaded on ship at B. C. port including rail freight and terminal charges.
[3] Inflation indices: 1983 = 1984 = 1; 1982 = 1.1; 1981 = 1.26.

3.0 Thermal Coal

3.1 Comments on Current Market Situation

Thermal coal markets are extremely soft. The stagnant world economy, postponements of new coal fired power plants and large increases in mine capacity have resulted in oversupply and price cutting.

South Africa is setting the world spot market price, currently U.S.$25-30 (Can$31-37*) per tonne, FOB Richards Bay. At this price the net back at the South Africa mine is U.S.$14-15 per tonne. Reportedly the South African producers are profitable at these levels. Hardly any other world producer can make money at these prices, certainly not Canadian and U.S. producers.

It is impossible to get purchasers to sign long term contracts. In fact, buyers in France, the second largest importer of thermal coal after Japan, are not renewing contracts expiring this year. They feel no long term threat to supply and are opting to depend on the spot market.

The world prices are so low that some east coast U.S. utilities are purchasing offshore rather than U.S. coal. Some U.S. producers have withdrawn from offshore markets until prices improve.

* Assuming Can $1 = U.S. $0.81.

Representative of what is happening with regard to plans for new coal fired plants is the latest forecast (unofficial) out of Japan. This estimates thermal coal imports at 30-35 million tpy in 1990. As late as mid 1983, the Japanese were forecasting 1990 imports at 42 million tpy. The reduction primarily reflects delays in conversion of existing oil fired power plants to coal and also construction of new power plants.

South Africa has announced expansion plans that could increase thermal coal exports to the 80-90 million tpy level by the early 1990's. 1982 exports were 26 million tonnes. Columbia's Cerrajon project is on schedule with shipments of 1 million tpy to start in 1986 growing to 15 million tpy in 1989. Columbia has reserves to support a production rate in the 25 million tpy range. Good coal reserves are being evaluated in Indonesia for domestic and export shipments. The Indian and Chinese coal industries have good potential for expansion. One forecaster thinks China might be shipping 20-30 million tpy to Japan by the end of the century.

It is believed that prices are currently as low as they will go. However, no increase is expected for the next few years or until the world economy has entered an extended period of growth. Even when the economy does pick up, marked increases in prices are not likely because of the large oversupply of capacity - existing and under construction.

3.2 Outlook for B. C. Sales

The major hurdle facing increased thermal coal sales from B. C. is high transportation costs. The quality of our coals (low volatile matter principally) does not help as well.

The following approximate data gives an indication of the transportation problems faced by B. C. relative to its major competitors:

	Rail Distance to Port	Ocean Distance to Japan
	km	km
South Africa	500	13 000
Australia (NSW)	105	8 300
U.S. (east coast)	640	17 600
Canada	1 200	8 300

Canadian coals have twice the rail haul to port that South African and U.S. coals have and ten times that of Australian producers. We have an ocean freight cost advantage over U.S. and South African coals to the Far East but not over Australia. The Australian, South African and U.S. coals are all of a more acceptable quality than B. C. coals.

At the current prices of about U.S.$25-30 per tonne*, FOBT B. C. ports (Can$31-37 per tonne) the following approximate cost structure for B. C. coals prevails:

Price FOBT B. C. port	31-37
Rail Freight + terminal	23**
Price FOR mine	8-14
Washing and Loading	5
Net to Mine	3-9

The net of $3-9 per tonne would apply only to coal by-product to a coking coal operation as no mining costs are considered. Consequently, it appears that at current prices only by-product thermal coal has any chance of being economic. In fact, even by-product producers appear to have essentially a choice of giving the coal away or of stockpiling it.

* washed to 11.5% ash

** higher in the North-East because of rail surcharges.

At this time it is impossible to capture new contract business. Any new coals sales are on a spot basis.

In 1982 total B. C. thermal offshore sales, largely to Japan, South Korea and Denmark, were 1.2 million tonnes of which 0.3 million was to Japan. These Japanese shipments compare to 0.6 and 0.5 million tonnes in 1975 and 1981, respectively.

3.3 Volume of B. C. Shipments

In 1984 it is forecast that B. C.'s shipments of thermal coal will be roughly the same as in 1983 and will hold at that level until 1987. At that time, because of an anticiapted upturn in world demand, an increase is expected and the volume will increase steadily thereafter. This forecast is presented in Table 24 (1984). Comparing 1986 with 2003 a compounded growth rate of 8.7% per year is forecast, a most optimistic outlook. Even at that, for most of the forecast period, B. C. mines will run at rates well below design capacity. Should the recovery in the world economy be delayed and/or the two new projects forecast for the province not materialize, B. C.'s sales might stagnate at the 2-3 tpy level for most of the forecast period.

Only Quinsam and Telkwa are forecast to come on stream in the forecast period. It is judged that the Mount Klappan anthracite property will not be put into production because of market and infrastructure contraints.

This tonnage forecast does not differ appreciably from that made last year.

TABLE 24 (1984)

FORECAST OF B. C. THERMAL COAL PRODUCTION, QUANTITY AND VALUE

Mine		million tonnes													
		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1995	2000	2003
Balmer*/ Greenhills	Production	0.3	0.5	0.5	0.51	0.6[3]	0.6	0.6	1.0	1.0	1.0	1.4	1.3	1.3	1.3
	Mine Plan	0.3	0.4	1.6	1.8	1.6	2.2	2.1	1.8	1.9	1.8	1.8	1.5	1.5	1.5
Byron Creek	Production	0.8[1]	0.8[1]	1.0[1]	1.0	1.0[8]	1.0	1.0	1.0	1.0	1.0	2.0	2.5	3.0	3.0
	Mine Plan	1.0	1.0	1.0	1.3	2.0	2.4	3.1	3.3	3.6	3.6	3.6	3.6	3.6	3.6
Fording*	Production	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Mine Plan	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Line Creek	Production			0.8	0.61	0.8[4]	0.8	0.8	1.0	1.0	1.1	1.3	1.4	1.4	1.4
	Mine Plan			0.6	1.0	1.1	1.1	1.1	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Quintette*	Production					0.2	-	-	-	0.2	0.5	1.0	1.1	1.1	1.1
	Mine Plan					1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Quinsam	Production											0.8	0.8	0.8	0.8
	Mine Plan						0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Telkwa	Production									0.9	0.9	0.9	1.4	1.4	1.4
	Mine Plan							1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5
Total Production		1.2	1.4	2.4	2.22[7]	2.7	2.5	2.5	3.5	4.6	5.0	7.9	9.0	9.5	9.5
Mine Plan		1.4	1.5	3.5	4.4	6.3	8.2	9.8	10.5	10.9	10.8	10.8	11.0	11.0	11.0
Operation Rate-%		86	93	69	50	43	30	26	33	42	46	73	82	86	86
Value (1983 Can$[5]) (FOBT)[2]															
$ per tonne[6]		55	82	66	40	40	40	45	50	51	51	52	54	57	59
million $		66	115	158	89	108	100	113	175	235	255	411	486	542	561

1 Assumed.
2 Constant 1983 $ assuming inflation indices 1984 = 1983 = 1.00; 1982 = 1.10; 1981 = 1.26; 1980 = 1.37.
3 Owner's forecast is 1.0.
4 Owner's forecast is 0.9.
5 Can $1 = U.S. $0.81.
6 In 1984 prices will range probably between Can $30-55 per tonne depending whether the coal is being sold on spot or contract basis.
7 B. C. Government estimate is 2.23.
8 Owner's estimate is 1.1 - 1.2.
* Thermal production is by-product of coking coal production.

3.4 Value of B. C. Shipments

Currently some B. C. coal sells on the spot market as low as U.S.$25 while some contract coal is selling as high as U.S.$45. The amounts that sell at which prices is known only to the individual shippers. Contacts in the industry state a reasonable average price to assume for 1984 is approximately U.S.$33 or Can$40 per tonne FOBT port.

The value of B. C. production shown in Table 24 (1984) assumes the Can$40 price will increase to $45 in 1986 and to $50 in 1987 (constant 1983 $). Thereafter, prices will increase at a compounded rate of 1% per year.

The price forecast is roughly 20% below those forecast last year. This fact plus slightly reduced annual tonnages combine to reduce the annual dollar values. Over the period 1984 to 1990 the accumulated value of $1,397 million is 23% lower than the corresponding number forecast last year.

4.0 Forecast of Electricity Consumption by the B.C. Coal Mining Industry

Revised Table 27 (1984) reflects the effect of the changed coking and thermal production levels on electricity consumptions. Actual consumptions for 1983 as reported by the companies are included.

TABLE 27 (1984)

FORECAST OF ELECTRICITY CONSUMPTION BY THE B. C. COAL MINING INDUSTRY (GW.h)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2003
A. Southeastern B. C.																					
Balmer	185	169	114[1]	175[2]	150	140[3]	130	130	130	130	130	130	130	130	130	135	135	140	140	145	145
Fording	160	143	100	100	100	100	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105
Coal Mountain	4	4	4	4	4	4	4	4	4	25	25	25	30	30	30	30	30	35	35	35	35
Greenhills		10	24	45	45	45	50	50	50	60	60	60	60	60	60	60	60	60	60	60	60
Line Creek		29	48	65	65	55	65	65	65	75	75	75	75	75	75	75	75	75	75	75	75
Sub-total	349	355	290	389	364	344	354	354	354	395	395	395	400	400	400	405	405	415	415	420	420
B. Northeastern B. C.																					
Quintette			53	95	95	95	70	75	80	85	85	85	85	85	85	85	90	90	95	95	95
Bullmoose			25	38	42	46	42	42	46	46	46	48	50	51	53	50	50	50	50	50	53
Sub-total			78	133	137	141	112	117	126	131	131	133	135	136	138	135	140	140	145	145	148
C. Vancouver Island																					
Quinsam										30	30	30	30	30	30	30	30	30	30	30	30
Wolf Mountain																					
Sub-total																					
D. Northwestern B. C.																					
Telkwa	—	—	—	—	—	—	—	25	25	25	25	25	35	35	35	35	35	35	35	35	35
E. Total (All Purchased)	349	355	368	522	501	485	466	496	505	581	581	583	600	601	602	605	610	620	625	630	633

[1] Stripping curtailed in 1983 therefore more required in 1984 (only).
[2] Stripping ratio expected to increase resulting in 5% more electricity consumption.
[3] A 1000 horsepower system might be installed in 1986. (5 GW.h per year)

POOR
QUALITY
ORIGINAL